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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/552,761

04/18/2000

Stefan Eckart

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10/02/2006

ATI TECHNOLOGIES, INC.
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EXAMINER

REKSTAD, ERICK J

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/552,761	Applicant(s) ECKART, STEFAN	
	Examiner Erick Rekstad	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-8, 11-22, 24, 27 and 30-32 is/are pending in the application.
- 4a) Of the above claim(s) 6-8 and 11-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 5, 27 and 30-32 is/are allowed.
- 6) ☐ Claim(s) 3, 4, 19-22, and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is a Non-Final Rejection for application no. 09/552,761 in response to the RCE filed on August 14, 2006 wherein claims 3, 4, 19-22, 24, 27 and 30-32 are presented for examination.

Response to Arguments

Applicant's arguments filed August 14, 2006 have been fully considered but they are not persuasive.

In response to the arguments related to claims 3, 4, 21 and 22, the Applicant argues the TA_i of Uz is taught to be the total activity over a plurality of frames of a scene while the claimed power value is determined based on pixel values of only the first frame of a plurality of frames. The Examiner respectfully disagrees. Uz teaches the preprocessor (20, Fig. 1A) obtains the total activity (TA_i) for a frame (Col 9 Lines 8-10). This activity is clearly based on pixel values of only the frame as Uz specifically teaches the TA_i is the sum of the total activities for all the macroblocks in a frame (Col 8 Line 51-Col 9 Line 10). This TA_i is then used by the master processor (30, Fig. 1A) to obtain maintain an "average total activity TA_i for the frames of a scene". The "average total activity TA_i for the frames of a scene" is then used to adjust a number of bits in a second frame based on the power value for the first frame (Col 11 Lines 11-50). The claim does not require the adjusting of the number of bits in a second frame to be based solely on the power value of the first frame nor does the claim require the frames to be consecutive frames. Therefore it is viewed by the examiner that the requirements of claims 3 and 21 are satisfied by Uz.

In response to the argument related to claim 24, the Applicant has presented the same argument as in the previous amendment (Filed February 13, 2006). Therefore, the Examiner has already responded to the arguments in the Office Action mailed May 12, 2006, as restated below.

In regards to the arguments related to claims 24 and 25, the applicant argues the Examiners statement that it would have been obvious to divide the method into sub-routines for a computer system to run the method. As stated in the previous Office Action, Chiang teaches the use of a general purpose computer (Col 11 Line 58-Col 12 Line 8, Fig. 7). A general purpose computer is a well known advancement to a specialty apparatus as a general purpose computer can perform sub-routines to perform the same tasks as the specialty apparatus but is easier to upgrade. Therefore since Chiang teaches the use of a general purpose computer to perform the sub-routines of Figure 4, it would have been obvious to one of ordinary skill in the art to perform the same tasks using a specialty apparatus containing blocks as a design choice.

Further the Applicant has not presented any arguments in relation to the amended claim 24, which now contains the requirements of now canceled claim 25. Therefore the previous rejection based on Chiang in view of Kuchibhotla is maintained.

The Applicant has not presented arguments related to the rejection of claims 19 and 20 and therefore the previous rejection based on Uz is maintained.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3, 19, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,686,963 to Uz et al.

[claim 3]

Uz teaches the use of a power value (total activity (TA_i)) for a first frame used to adjust the bits for a second frame (Col 9 Lines 7-10, Col 11 Lines 11-50). As shown by the citation, Uz teaches the bits for a second frame are set to a default when a Scene Change is detected (Col 11 Lines 40-50). The scene change is determined based on the TA_i value (Col 11 Lines 22-37). Note, TA_i was equated to meet the power limitation. Applicant's own specs (page 27) appears to teach that power is fully based on complexity. Thus, the TA_i meets the power limitation.

[claim 19]

Uz describes the detection of a scene change using a prediction error image and using the scene change to reset the global complexity history "average of TA_i " (Col 11 Lines 50-56). TA_i is used to provide the rate control (rate control quantization scale factor) for the video encoder (Col 11 Line 61-Col 12 Line 10). (Col 11 Line 10-Col 12 Line 10).

[claims 21 and 22]

Uz teaches in figure 1a, the apparatus for rate control for a constant-bit-rate finite-buffer-size video encoder comprising a preprocessing stage (20) for determining a power value (TA_i) (Col 8 Lines 32-67, Col 9 Lines 1-10). The power value is based on pixel values of only the first frame (Col 9 Lines 7-10). Uz further teaches a group-of-pictures-level rate control block (30) operatively coupled to the preprocessing stage to

receive the power value and to provide a target quantizer step size used to provide rate control for the video encoder (Col. 11 Lines 12-67 and Col. 12 Lines 1-9). Uz teaches the non-intra frames having sizes based on the expected size of the future intra frames (Col. 11 Lines 41-49). Therefore Uz satisfies the requirements of claim 21. Further, Uz teaches the updating of the power value for each subsequent picture being encoded as required by claim 22 (Col. 8 Lines 33-35).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uz as applied to claim 3 above, and further in view of US Patent 6,226,326 to Mihara.

[claim 4]

Uz's TA_i variable is a sum of the total activities (sum of the absolute differences of pixel blocks) for all the macroblocks in a frame (Col 8 Lines 51-64). The controller maintains an "average TA_i for the frames of a scene" (Col 11 Lines 17-18). Uz does not teach how to calculate the average. Mihara teaches the steps for calculating the power value by calculating a sum of absolute differences between the pixel values in the respective pixel block and the average value. The values are added for each of the plurality of pixel blocks within the first frame to obtain a power value for the first frame (Col 19, Lines 10-20). It would have been obvious to one skilled in the art at the time of

the invention to calculate the average for each block or each frame as taught by Mihara in order to obtain the energy value of the frame.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uz as applied to claim 19 above, and further in view of US Patent 5,724,100 to Kuchibhotla and 'Hierarchical Scene Change Detection in an Mpeg-2 Compressed Video Sequence' to Shin et al.

[claim 20]

Uz teaches the use of a method for rate control that obtains a scene change indication from a prediction error image and using the scene change indication to reset a global complexity history and using the global complexity history to provide the rate control for the video encoder. Uz does not teach the method of counting a first number of intra coded pixel blocks in the prediction error image, counting a second number of non-intra coded pixel blocks in the prediction error image, calculating a ratio of the first number and the second number, comparing the ratio to a threshold to determine a result and using the result as a scene change indication. Kuchibhotla does teach this method as a means to prevent exceeding a coding bit budget (Col 2 Lines 35-58, Col 3 Line 53-Col 4 line 5). It would have been obvious to one skilled in the art at the time of the invention to use the method of Uz in conjunction with the method of Kuchibhotla in order to prevent exceeding a coding bit budget.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,690,833 to Chiang et al. in view of US Patent 5,724,100 to Kuchibhotla.

[claim 24]

As shown in Figure 4, Chiang teaches a method for rate control wherein the method provides a means for determining the distance according to sums of absolute differences (step 410). Chiang further teaches the use of the distance to produce a target quantizer step size for a pixel block (steps 420-440) (Col 8 Lines 27-Col 10 Line 12). Chiang further teaches the use of a computer system to perform the encoding steps (Col 11 Line 58-Col 12 Line 8, Figure 7). Chiang does not teach the specific prediction error image block and picture-level rate control block. It would have been obvious to one of ordinary skill in the art at the time of the invention to divide the method of Chiang into any desired subroutines (blocks) in order for the method to be run by the system of Chiang as it is well known in the art to provide a program with subroutines to perform tasks in order to easily replace or update functions in the program (Official Notice).

Chiang further teaches the complexity value (MAD) determining means for all pixel blocks (Col 8 Lines 48-54). Although Chiang fails to teach the determining of intra vs non-intra blocks, Kuchibhotla does teach the determining of intra vs non-intra blocks (Fig. 1 element 134, Col 3 Line 30-Col 4 Line 5). Kuchibhotla further teaches the benefit of half-pel motion estimation to obtain a correct scene change detection (Col 4 Line 64-Col 5 Line 10). Since both systems provide constant-bit-rate it would have been obvious to one skilled in the art at the time of the invention to substitute Kuchibhotla's scene change detector into the system of Chiang since the scene change detector of Kuchibhotla has the advantage of accurately detecting scene change for half pixel motion compensation.

Allowable Subject Matter

Claims 5, 27, 30-32 are allowed.

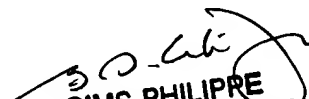
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 571-272-7338. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erick Rekstad
Examiner
AU 2621



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PRIMARY EXAMINER

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